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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

MODIFIED RING COMPRESSION TESTS ON CORRUGATING MEDIUM

Project 1108-33

Preliminary Report (Report Two)

to

TECHNICAL COMMITTEE

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

November 15, 1963

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INTRODUCTION

As requested by the Technical Committee, modified ring compression tests in the cross-machine direction are currently being made on corrugating medium sampled from each roll submitted for evaluation in connection with the base-line study on corrugating medium, Project 1108-17. This testing program was initiated on the rolls of medium received during July. The current report presents a bi-monthly summation of the results obtained during September and October.

PROCEDURE

The procedure followed in evaluating each roll of corrugating medium for cross-machine direction modified ring compression has involved a number of steps which are described subsequently in this paragraph in the order of their performance. From each roll of medium, several wraps were taken for test purposes after the outer layers had been removed. The sample taken for test purposes was cut into sheets twelve inches in length which were then preconditioned for at least 24 hours in an atmosphere at 73°F. and less than 35% R.H. followed by conditioning for at least 48 hours in an atmosphere at 73°F. and 50% R.H., the latter atmosphere also being the environment in which subsequent specimen preparation and testing were carried out. From each of five of the conditioned sheets two 6 by 0.5 inch specimens (the 6-inch dimension being parallel to the machine direction) were cut with a Concora cutter, the 6-inch dimension of one specimen from each of these pairs being subsequently trimmed to 2 inches with a card cutter for the modified ring compression test, whereas the other specimen was used for the Concora test for Project 1108-17. The loading edges of each specimen for the modified ring compression test were touched against a sheet of wax-saturated paper toweling lying on a hot plate set at 170 to 175°F. (Mobilwax D was used to saturate the paper toweling.) The loading edges of each specimen were held in contact with the paper toweling long enough to permit the wax to migrate into the specimen to a depth of approximately 1/16-inch. The next step involved applying a 3/16 to 1/4-inch wide stripe of Weldwood contact cement by means of a brush to each end of the specimen to permit overlapping and adhering the ends together. Prior to this, however, the contact cement was given time to become visibly dry so that when the ends were overlapped and joined, their bonding was immediate and secure. The overlapping and joining of the ends of each specimen was accomplished

by wrapping the specimen around a Plexiglas cylinder having a height of 1/2-inch and a diameter of 0.579 inch. This cylinder dimension limited the overlapping of the ends to a minimum of 1/8-inch and maximum of 3/16-inch. The Plexiglas cylinder was also helpful in achieving parallel loading edges.

After being prepared as described above, each specimen was conditioned in the test atmosphere for at least 12 hours and then tested using the conventional ring holder (ASTM) but substituting a 1/4-inch high Plexiglas cylinder (of the same diameter as the cylinder on which the specimen was formed) for the conventional island. The testing was carried out on an H. and D. compression tester at a loading rate of approximately 900 lb./min. measured with the platens in contact with each other. The modified ring compression strength was recorded to the nearest pound for each of the five specimens prepared from a given roll, the average of the five specimens being expressed on a unit width basis (lb./in.) by dividing the average maximum load (pounds) sustained by the five specimens by their average length which was two inches.

RESULTS

During September and October, 170 rolls representing the production of 23 machines were evaluated for cross-machine modified ring compression. The results obtained for each machine are given in Tables I through XXIII for Machines A through W, respectively. It may be noted from the results for each machine given in Tables I through XXIII that in addition to maximum, minimum, and average data for each roll, a composite average is also given, having been obtained by determining the arithmetic mean of the averages for the individual rolls. This composite average for each machine is referred to as the "current machine average." In Table XXIV the current machine averages and number of rolls evaluated are summarized for each machine. In addition a "current F.K.I. average" is shown, having been calculated by determining the arithmetic mean of the current machine averages. A graphical representation of the current machine averages and the current F.K.I. average is shown in Fig. 1.

TABLE I

SUMMARY OF DATA FOR MACHINE A

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8113	A-1	8- 1-63	9-11-63	420	15.0	13.5	14.4
K-8114	A-2	8- 5-63	9-11-63	421	16.0	13.5	14.7
K-8115	A-3	8- 9-63	9-11-63	422	14.0	11.5	13.0
K-8116	A-4	8-12-63	9-11-63	423	15.5	13.0	14.1
K-8117	A-5	8-20-63	9-11-63	424	14.5	12.5	13.4
K-8204	A-6	9- 6-63	10-11-63	425	14.5	13.5	13.9
K-8205	A-7	9-11-63	10-11-63	426	14.0	12.0	13.0
K-8206	A-8	9-18-63	10-11-63	427	14.0	12.5	13.6
K-8207	A-9	9-24-63	10-11-63	428	14.5	12.0	13.5
					Current Machine Av.		13.7

TABLE II

SUMMARY OF DATA FOR MACHINE B

September and October, 1963
(Type of Medium: Semichemical)

K-8105	B-1	8-20-63	9- 3-63	26	13.5	12.5	13.1
K-8112	B-2	8-30-63	9- 9-63	27	14.5	12.5	13.7
K-8127	B-3	9- 5-63	9-13-63	28	14.0	12.0	13.3
K-8153	B-4	9-11-63	9-19-63	29	12.0	10.0	11.1
K-8163	B-5	9-18-63	9-23-63	30	14.5	13.5	14.0
K-8181	B-6	9-24-63	9-30-63	31	13.5	13.0	13.2
K-8194	B-7	10-4-63	10- 8-63	32	14.5	13.0	13.9
K-8210	B-8	10-8-63	10-14-63	33	12.0	10.0	11.2
					Current Machine Av.		12.9

TABLE III

SUMMARY OF DATA FOR MACHINE C

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8125	C-1	8-22-63	9-13-63	4702	13.5	11.5	12.6
K-8126	C-2	8-23-63	9-13-63	4823	12.5	11.5	12.3
K-8164	C-3	9- 5-63	9-24-63	651	11.5	11.0	11.3
K-8179	C-4	9-15-63	9-30-63	2966	12.0	10.0	11.1
K-8180	C-5	9-16-63	9-30-63	3324	13.0	11.5	12.0
K-8175	C-6	9-17-63	9-26-63	3513	13.5	11.5	12.7
K-8176	C-7	9-18-63	9-26-63	3926	14.0	13.0	13.3
					Current Machine Av.		12.2

TABLE IV

SUMMARY OF DATA FOR MACHINE D

September and October, 1963
(Type of Medium: Bogus)

K-8094	D-1	7-15-63	8-30-63	182	8.5	7.0	7.8
K-8095	D-2	7-15-63	8-30-63	183	8.5	6.5	7.3
K-8096	D-3	7-20-63	8-30-63	184	8.5	7.0	7.7
K-8097	D-4	7-20-63	8-30-63	185	7.5	6.5	6.8
K-8187	D-5	9- 5-63	10- 3-63	186	9.5	8.0	8.6
K-8184	D-6	9- 9-63	10- 3-63	187	9.5	8.0	8.8
K-8185	D-7	9-16-63	10- 3-63	188	9.0	7.5	8.5
K-8186	D-8	9-20-63	10- 3-63	189	9.0	8.0	8.5
K-8230	D-9	10- 7-63	10-21-63	100	8.5	8.0	8.4
K-8231	D-10	10-15-63	10-21-63	101	8.5	7.5	7.8
					Current Machine Av.		8.0

TABLE V

SUMMARY OF DATA FOR MACHINE E

September and October, 1963
(Type of Medium: Bogus)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8073	E-1	8-14-63	8-26-63	416	10.0	9.5	9.8
K-8074	E-2	8-21-63	8-26-63	417	9.5	8.0	8.5
K-8158	E-3	9- 4-63	9-23-63	418	11.5	10.0	10.7
K-8160	E-4	9-11-63	9-23-63	419	10.5	10.0	10.2
K-8159	E-5	9- 6-63	9-23-63	420	11.5	10.0	10.8
K-8161	E-6	9-17-63	9-23-63	421	11.0	10.0	10.4
K-8226	E-7	10- 3-63	10-21-63	422	9.5	8.5	9.0
K-8227	E-8	10- 4-63	10-21-63	423	10.0	8.0	9.1
K-8228	E-9	10- 9-63	10-21-63	424	9.5	8.0	9.1
K-8229	E-10	10-10-63	10-21-63	425	10.0	8.0	9.1
						Current Machine Av.	9.7

TABLE VI

SUMMARY OF DATA FOR MACHINE F

September and October, 1963
(Type of Medium: Semichemical)

K-8118	F-1	--	9-12-63	89	13.5	11.0	12.5
K-8119	F-2	8-30-63	9-12-63	90	12.5	11.5	11.9
K-8120	F-3	9- 1-63	9-12-63	91	13.0	10.0	12.0
K-8135	F-4	--	9-18-63	1	13.0	11.0	12.1
K-8136	F-5	--	9-18-63	2	13.0	12.0	12.5
						Current Machine Av.	12.2

TABLE VII

SUMMARY OF DATA FOR MACHINE G

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8111	G-1	8-19-63	9- 9-63	557	14.0	12.5	13.4
K-8131	G-2	9-10-63	9-17-63	558	15.5	13.5	14.2
K-8132	G-3	9-11-63	9-17-63	559	14.5	13.0	13.6
K-8166	G-4	9-17-63	9-24-63	560	14.0	12.5	13.3
K-8197	G-5	9-27-63	10- 9-63	561	14.0	12.5	13.7
K-8234	G-6	10-14-63	10-21-63	562	14.0	11.0	12.7
K-8235	G-7	10-14-63	10-21-63	563	13.0	11.5	12.3
K-8236	G-8	10-15-63	10-21-63	564	14.5	12.5	13.3
					Current Machine Av.		13.3

TABLE VIII

SUMMARY OF DATA FOR MACHINE H

September and October, 1963
(Type of Medium: Semichemical)

K-8086	H-1	8-22-63	8-28-63	981	12.5	10.5	11.2
K-8087	H-2	8-22-63	8-28-63	982	12.0	11.5	11.6
K-8121	H-3	9- 4-63	9-12-63	989	13.5	11.0	12.0
K-8122	H-4	9- 4-63	9-12-63	990	13.5	12.0	13.1
K-8173	H-5	9-18-63	9-25-63	997	13.0	11.0	12.1
K-8174	H-6	9-18-63	9-25-63	998	13.5	12.5	13.1
K-8198	H-7	9-30-63	10- 9-63	1005	13.0	11.0	11.9
K-8199	H-8	9-30-63	10- 9-63	1006	13.0	10.5	11.6
K-8242	H-9	10-17-63	10-24-63	1013	12.5	11.5	12.1
K-8243	H-10	10-17-63	10-24-63	1014	12.5	10.5	11.7
					Current Machine Av.		12.0

TABLE IX

SUMMARY OF DATA FOR MACHINE I

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8108	I-1	8-12-63	9- 5-63	313	15.0	13.5	14.1
K-8107	I-2	8-19-63	9- 4-63	548	14.5	13.0	13.9
K-8165	I-3	9- 9-63	9-24-63	153	15.0	13.5	14.1
K-8208	I-4	9-24-63	10-14-63	614	12.5	11.0	12.2
K-8209	I-5	9-30-63	10-14-63	808	15.5	13.5	14.8
K-8220	I-6	10- 8-63	10-18-63	234	15.5	12.5	14.0
					Current Machine Av.		13.8

TABLE X

SUMMARY OF DATA FOR MACHINE J

September and October, 1963
(Type of Medium: Semichemical)

K-8084	J-1	8-21-63	8-28-63	695	14.0	11.5	12.5
K-8154	J-2	9-12-63	9-19-63	696	14.0	12.0	12.7
K-8162	J-3	9-17-63	9-23-63	697	14.0	12.5	12.9
					Current Machine Av.		12.7

TABLE XI

SUMMARY OF DATA FOR MACHINE K

September and October, 1963
(Type of Medium: Semichemical)

K-8169	K-1	8- 5-63	9-25-63	543	14.0	12.5	13.2
K-8170	K-2	8-10-63	9-25-63	544	14.5	12.5	13.6
K-8171	K-3	8-22-63	9-25-63	545	14.0	11.0	12.9
K-8172	K-4	8-31-63	9-25-63	546	15.0	13.5	14.1
K-8182	K-5	9- 1-63	10- 1-63	547	14.0	13.5	13.7
K-8183	K-6	9-12-63	10- 1-63	548	13.5	10.0	11.9
K-8190	K-7	9-18-63	10- 4-63	549	15.0	11.5	13.2
K-8191	K-8	9-20-63	10- 4-63	550	15.5	11.5	13.6
					Current Machine Av.		13.3

TABLE XII

SUMMARY OF DATA FOR MACHINE L

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8081	L-1	8-22-63	8-27-63	--	12.5	11.5	12.0
K-8141	L-2	9- 4-63	9-18-63	--	13.0	12.0	12.5
K-8142	L-3	9- 5-63	9-18-63	--	12.5	11.5	11.9
K-8143	L-4	9- 6-63	9-18-63	--	12.5	10.0	11.8
K-8144	L-5	9-10-63	9-18-63	--	12.0	11.0	11.6
K-8145	L-6	9-12-63	9-18-63	--	12.0	11.5	11.8
					Current Machine Av.		11.9

TABLE XIII

SUMMARY OF DATA FOR MACHINE M

September and October, 1963
(Type of Medium: Semichemical)

K-8076	M-1	8-19-63	8-26-63	79	12.5	11.5	11.9
K-8104	M-2	8-26-63	8-30-63	80	11.5	10.0	10.9
K-8110	M-3	8-31-63	9- 6-63	81	13.5	11.0	12.1
K-8157	M-4	9-12-63	9-20-63	82	14.5	11.0	12.2
K-8168	M-5	9-19-63	9-24-63	83	12.0	10.5	11.5
K-8178	M-6	9-21-63	9-27-63	84	14.5	12.0	13.4
K-8193	M-7	10- 1-63	10- 7-63	85	13.5	12.5	13.0
K-8241	M-8	10-17-63	10-23-63	87	13.0	11.0	11.8
K-8245	M-9	10-20-63	10-24-63	88	13.5	10.5	12.1
					Current Machine Av.		12.1

TABLE XIV

SUMMARY OF DATA FOR MACHINE N

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8088	N-1	8-14-63	8-29-63	H-3	12.5	11.0	11.9
K-8089	N-2	8-14-63	8-29-63	H-5	14.0	12.5	13.3
K-8090	N-3	8-16-63	8-29-63	H-4	14.5	13.5	13.9
K-8091	N-4	8-18-63	8-29-63	H-6	12.0	11.0	11.5
K-8200	N-5	8-18-63	10-10-63	H-6	14.0	12.5	13.3
K-8201	N-6	9- 6-63	10-10-63	I-11	15.5	14.0	14.6
K-8202	N-7	9- 7-63	10-10-63	I-12	15.5	14.0	14.4
K-8203	N-8	9-25-63	10-10-63	I-13	14.0	11.5	13.2
						Current Machine Av.	13.3

TABLE XV

SUMMARY OF DATA FOR MACHINE O

September and October, 1963
(Type of Medium: Semichemical)

K-8137	O-1	9- 4-63	9-18-63	--	13.5	11.5	12.3
K-8138	O-2	9- 5-63	9-18-63	--	12.5	11.5	11.8
K-8139	O-3	9- 7-63	9-18-63	--	13.5	11.5	12.4
K-8140	O-4	9-10-63	9-18-63	--	14.0	12.0	12.9
						Current Machine Av.	12.4

TABLE XVI

SUMMARY OF DATA FOR MACHINE P

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8123	P-1	9- 4-63	9-13-63	995	16.5	13.5	15.1
K-8124	P-2	9- 4-63	9-13-63	996	16.0	14.5	15.1
K-8129	P-3	9- 9-63	9-16-63	1003	13.0	12.0	12.5
K-8130	P-4	9- 9-63	9-16-63	1004	13.5	12.5	13.0
K-8221	P-5	10- 8-63	10-18-63	1011	12.5	10.0	11.2
K-8222	P-6	10- 8-63	10-18-63	1012	12.0	11.5	11.7
K-8237	P-7	10-15-63	10-21-63	1019	13.5	11.5	12.5
K-8238	P-8	10-15-63	10-21-63	1020	13.0	11.5	12.2
					Current Machine Av.		12.9

TABLE XVII

SUMMARY OF DATA FOR MACHINE Q

September and October, 1963
(Type of Medium: Semichemical)

K-8075	Q-1	8-19-63	8-26-63	79	13.5	11.5	12.7
K-8103	Q-2	8-23-63	8-30-63	80	13.5	11.0	12.0
K-8109	Q-3	8-31-63	9- 6-63	81	12.5	11.0	11.7
K-8156	Q-4	9-12-63	9-20-63	82	13.0	11.0	12.2
K-8167	Q-5	9-20-63	9-24-63	83	12.0	10.5	11.3
K-8177	Q-6	9-21-63	9-27-63	84	13.5	12.5	13.0
K-8192	Q-7	10- 1-63	10- 7-63	85	12.5	12.0	12.4
K-8211	Q-8	10-10-63	10-15-63	86	13.0	11.0	12.1
K-8240	Q-9	10-17-63	10-23-63	87	12.5	11.5	11.9
K-8244	Q-10	10-20-63	10-24-63	88	14.0	11.5	12.5
					Current Machine Av.		12.2

TABLE XVIII

SUMMARY OF DATA FOR MACHINE R

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8133	R-1	8-10-63	9-18-63	241	14.0	12.5	13.4
K-8134	R-2	8-28-63	9-18-63	242	15.0	13.5	14.3
K-8212	R-3	9- 1-63	10-16-63	243	14.0	12.5	13.3
K-8213	R-4	9- 9-63	10-16-63	244	14.5	12.5	13.7
K-8214	R-5	9-22-63	10-16-63	245	13.5	11.5	12.3
K-8215	R-6	10- 8-63	10-16-63	246	14.0	12.5	13.1
					Current Machine Av.		13.4

TABLE XIX

SUMMARY OF DATA FOR MACHINE S

September and October, 1963
(Type of Medium: Semichemical)

K-8077	S-1	7- 5-63	8-26-63	21	13.5	11.0	12.4
K-8078	S-2	7-10-63	8-26-63	22	13.5	11.0	12.2
K-8079	S-3	8- 7-63	8-26-63	23	11.5	10.0	11.1
K-8150	S-4	8-20-63	9-19-63	24	13.5	12.5	12.9
K-8151	S-5	8-26-63	9-19-63	25	13.0	11.0	11.8
K-8152	S-6	8-28-63	9-19-63	26	13.0	10.0	11.7
K-8216	S-7	9-14-63	10-16-63	27	13.5	10.0	12.0
K-8217	S-8	9-18-63	10-16-63	28	11.5	10.5	11.0
K-8218	S-9	9-18-63	10-16-63	29	12.5	11.0	11.6
K-8219	S-10	9-26-63	10-16-63	30	12.5	10.0	11.4
					Current Machine Av.		11.8

TABLE XX

SUMMARY OF DATA FOR MACHINE T

September and October, 1963
(Type of Medium: Bogus)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8098	T-1	7-24-63	8-30-63	184	8.0	6.0	6.8
K-8099	T-2	7-24-63	8-30-63	185	8.5	6.0	7.2
K-8100	T-3	7-25-63	8-30-63	186	8.0	6.5	7.3
K-8101	T-4	7-25-63	8-30-63	187	7.5	6.5	7.1
K-8102	T-5	7-29-63	8-30-63	188	8.5	6.5	7.5
K-8188	T-6	9- 4-63	10- 3-63	190	7.5	7.0	7.4
K-8189	T-7	9-11-63	10- 3-63	191	8.0	6.5	7.4
K-8195	T-8	9-23-63	10- 8-63	192	8.0	5.5	6.9
K-8196	T-9	9-30-63	10- 8-63	193	8.0	6.0	7.2
K-8232	T-10	10- 7-63	10-21-63	200	9.0	7.5	8.2
K-8233	T-11	10-14-63	10-21-63	201	9.0	6.5	8.0
						Current Machine Av.	7.4

TABLE XXI

SUMMARY OF DATA FOR MACHINE U

September and October, 1963
(Type of Medium: Semichemical)

K-8082	U-1	8-15-63	8-27-63	--	13.0	11.5	12.0
K-8083	U-2	8-23-63	8-27-63	--	13.0	10.5	11.6
K-8146	U-3	9- 4-63	9-18-63	--	12.5	10.5	11.8
K-8147	U-4	9- 5-63	9-18-63	--	13.5	11.5	12.4
K-8148	U-5	9- 6-63	9-18-63	--	14.0	13.0	13.5
K-8149	U-6	9-10-63	9-18-63	--	14.0	13.5	13.6
						Current Machine Av.	12.5

TABLE XXII

SUMMARY OF DATA FOR MACHINE V

September and October, 1963
(Type of Medium: Semichemical)

I.P.C. K-No.	Code	Date Made	Date Received	Mill Roll No.	Cross-Machine Modified Ring Compression, lb./in. Max.	Min.	Av.
K-8085	V-1	8-20-63	8-28-63	361	11.5	10.5	10.8
K-8106	V-2	8-28-63	9- 4-63	362	14.0	12.0	12.8
K-8128	V-3	9- 7-63	9-16-63	363	13.5	11.5	12.5
K-8155	V-4	9-12-63	9-19-63	364	12.5	11.5	12.0
					Current Machine Av.		12.0

TABLE XXIII

SUMMARY OF DATA FOR MACHINE W

September and October, 1963
(Type of Medium: Kraft)

K-8239	W-1	10-1-63	10-22-63	21	12.5	9.5	11.4
K-8223	W-2	10-1-63	10-21-63	22	13.5	12.0	12.8
K-8224	W-3	10-1-63	10-21-63	23	13.5	10.5	12.3
K-8225	W-4	10-1-63	10-21-63	24	13.5	11.5	12.5
					Current Machine Av.		12.2

TABLE XXIV

SUMMARY OF CURRENT MACHINE AVERAGES

September and October, 1963

Machine Code	Type of Medium	No. of Rolls	Cross-Machine Modified Ring Compression, lb./in.
A	Semichemical	9	13.7
B	Semichemical	8	12.9
C	Semichemical	7	12.2
D	Bogus	10	8.0
E	Bogus	10	9.7
F	Semichemical	5	12.2
G	Semichemical	8	13.3
H	Semichemical	10	12.0
I	Semichemical	6	13.8
J	Semichemical	3	12.7
K	Semichemical	8	13.3
L	Semichemical	6	11.9
M	Semichemical	9	12.1
N	Semichemical	8	13.3
O	Semichemical	4	12.4
P	Semichemical	8	12.9
Q	Semichemical	10	12.2
R	Semichemical	6	13.4
S	Semichemical	10	11.8
T	Bogus	11	7.4
U	Semichemical	6	12.5
V	Semichemical	4	12.0
W	Kraft	4	12.2
	Total	170	
	Current F.K.I. Average		12.1

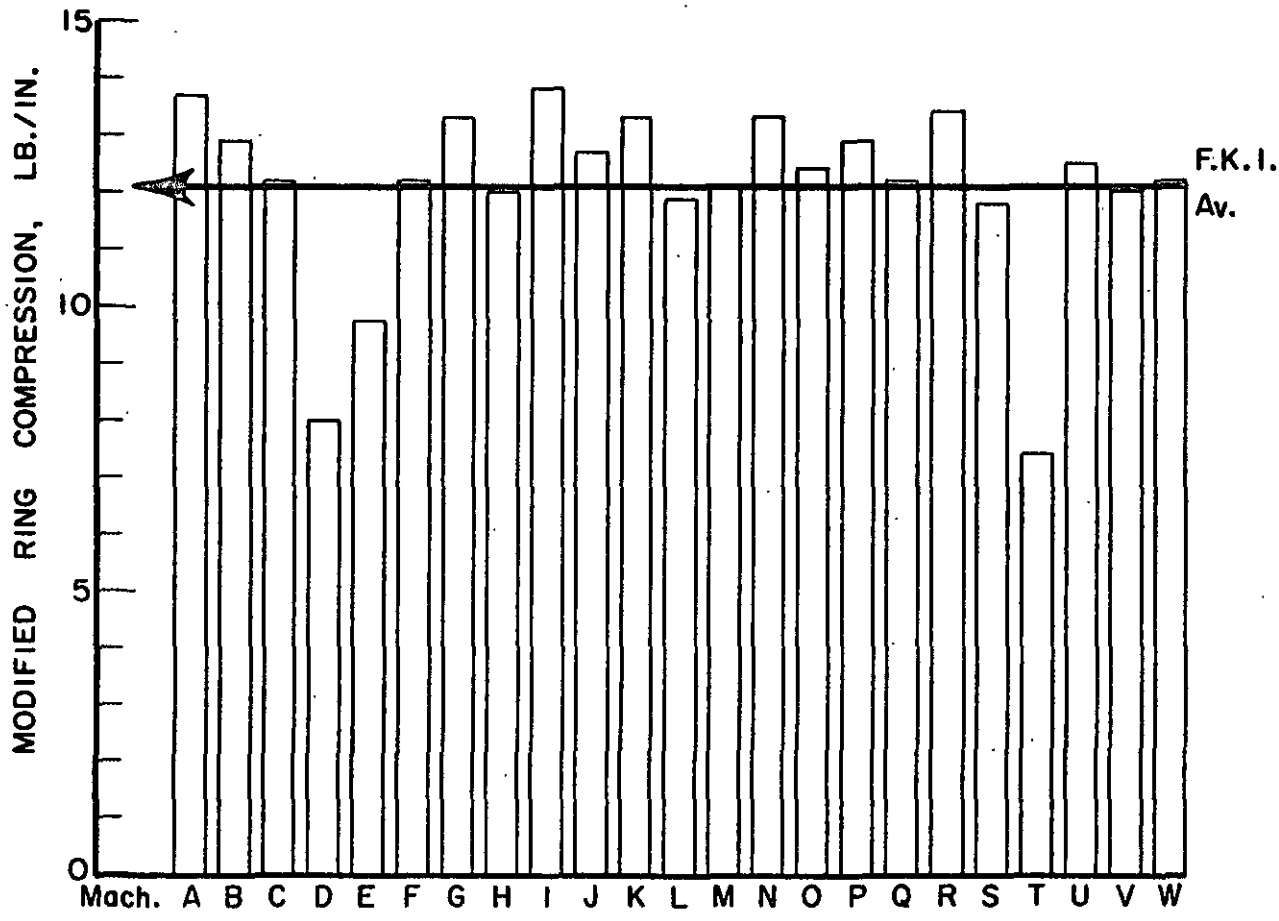

Figure 1. Comparison of Cross-Machine Direction
Modified Ring Compression Results